

### Remarks

Following this amendment, Claims 1-3 and 5-10 are active in the application.

In the official action mailed on 13 March 2007, the Examiner requests clarification of whether the recitation of the terms “primary core” and “secondary core” is one of patentably distinct structure or a linguistic difference that has no structural difference. In response, the applicant has amended Claim 1 and Claim 7 to expurgate these terms. The applicant respectfully submits that the amendments render the Examiner’s query moot.

#### I. INTERVIEW

The undersigned attorney thanks Examiner Chiem for her kind guidance in the course of a telephone interview on 3 April 2007 in which the official action, Figure 2B of the application and radial fill holes at locations not at the terminus of the holey fiber optic cable were discussed.

#### II. CLAIM REJECTIONS UNDER 35 USC § 102(b)

The official action mailed on 6 September 2006 rejected Claims 1, 4, and 6 under 35 USC § 102(b) as being anticipated by United States patent no. 6,972,894 of Bjarklev et al. (*Bjarklev*). The applicant has cancelled Claim 4. The applicant respectfully traverses the rejection of Claims 1 and 6 on the grounds that the cited reference neither teaches nor suggests all of the claim elements. The official action states:

Bjarklev discloses in Figs. 2, 4, 5, and 9 an optical waveguide absorption cell (Fig. 9), comprising: a first wave-guide (92); a primary core (41) including a holey waveguide (94) filled with a known selective absorption medium (col. 5, lines 30-36), wherein a first terminus of said holey wave-guide (94) is coupled to a first terminus of said first wave-guide; and a secondary core including said primary core; and a second wave-guide (93), wherein a first terminus of said second waveguide is coupled to a second terminus of said holey waveguide.

Bjarklev discloses an optical wavelength conversion device in which modulated light of wavelength  $\lambda_1$  and modulated light of wavelength  $\lambda_2$  is coupled through optical fibers into a microstructured optical waveguide. The microstructured optical waveguide comprises “non-linear material having an index of refraction which changes as a non-linear function of light intensity.” The non-linear material comprised in the microstructured optical waveguide mixes the light of wavelength  $\lambda_1$  and the light of wavelength  $\lambda_2$  to modulate the light of wavelength  $\lambda_2$

with the modulation of the light of wavelength  $\lambda_1$ .

The official action that Bjarklev discloses an optical waveguide absorption cell in Figure 9. The applicant respectfully disagrees. Bjarklev discloses an optical wavelength converter (see the Title of the Invention). Notwithstanding Bjarklev's optical waveguide converter and the claimed optical waveguide absorption cell both comprising optical waveguides, an optical waveguide converter is not an optical waveguide absorption cell and could not be used as such. The presence of optically non-linear material in the microstructures of Bjarklev's optical waveguide converter would make it impossible for Bjarklev's optical wavelength converter to operate as an optical waveguide optical cell that could be used on the optical measurements described with reference to Figures 4-7 of the application.

The official action states that Bjarklev discloses "a holey waveguide (94) filled with a known selective absorption medium" at col. 5, lines 30-36. The applicant acknowledges that Bjarklev discloses a holey waveguide, but respectfully submits that the micro-structures in Bjarklev's waveguide cannot accurately be said to be filled with a known selective absorption medium. The cited passage of Bjarklev's disclosure discloses an optical waveguide containing micro-structures features filled with *optically non-linear material*. Microstructures features filled with optically *non-linear* material are essential for Bjarklev's waveguide to perform its stated wavelength conversion function. The applicant has been unable to find anything in the cited passage of Bjarklev's disclosure that teaches or suggests that the optically non-linear material filling the microstructures in Bjarklev's optical waveguide converter constitutes a "selective absorption medium." Nor has the applicant been able to find teaching or suggestion in the cited passage of Bjarklev's disclosure with regard to the optically non-linear material filling the microstructures in Bjarklev's optical waveguide converter having any kind of absorption property that would allow such material to be accurately called "a selective absorption medium."

Accordingly, the applicant respectfully submits that Bjarklev cannot accurately be said to disclose either of "an optical waveguide absorption cell" and "a holey waveguide (94) filled with a known selective absorption medium," as asserted by the official action.

Accordingly, the applicant respectfully submits that Claim 1 as now amended is patentable because the cited reference does not disclose all the claim limitations. The applicant

additionally submits that Claims 2, 3, 5 and 6 as now amended are patentable at least because of their dependence on Claim 1.

### III. CLAIM REJECTIONS UNDER 35 USC § 103(a)

Claim 7 is rejected under 35 USC § 103(a) as being unpatentable over Bjarklev in view of United States patent no. 6,496,634 of Levenson. The applicant respectfully traverses the rejection on the grounds that the proposed combination of references neither teaches nor suggests all the claim limitations.

The applicant respectfully submits that Bjarklev does not disclose a fiber optic absorption cell as claimed in Claim 7 for reasons similar to those set forth above with reference to Claim 1. Moreover, the applicant respectfully submits that Bjarklev does not disclose “*a known selective absorption medium filling said voids*” as recited in Claim 7 for reasons similar to those set forth above with reference to Claim 1.

The official action states that Levenson discloses filling a holey waveguide with an optically non-linear medium through holes in the cladding, citing Figure 9 and col. 4, lines 1-6. The applicant has amended claim 7 to recite that the fill hole extends *radially* to the voids in the core (see Figure 3A). The applicant notes that Levenson’s Figure 9 shows holes in the cladding material, but respectfully submits that such holes extend *axially*, and not *radially*, as recited in Claim 7 as now amended. The applicant respectfully submits that the description of Levenson’s Figure 9 at col. 5, lines 38-49, confirms that the holes are axial.

Moreover, Levenson’s col. 4, lines 1-6, describes Figure 3 and again describes filling axial voids with optically non-linear liquid through the *cut end* of the fiber. In other words, Levenson’s fill holes cannot accurately be said to be “at a location that is not at a terminus of said holey fiber optic cable,” as recited in Claim 7 as now amended.

Accordingly, the applicant respectfully submits that Claim 7 as now amended is patentable because the proposed combination of references neither teaches nor suggests all the claim limitations. The applicant additionally submits that Claims 8-10 are patentable at least because of their dependence on Claim 7.

The applicant respectfully requests reconsideration of the rejected claims. The applicant

believes that the application as now amended is in condition for allowance, and respectfully requests such favorable action. If any matters remain outstanding in the application, the Examiner is respectfully invited to telephone the applicant's attorney at (408) 553-2715 so that these matters may be resolved.

Respectfully submitted,

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